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(54) **CANE WALKING SUPPORT APPARATUS CONFIGURED TO TRANSFORM INTO A CHAIR**
(71) Applicant: **Maria Peck**, San Diego, CA (US)
(72) Inventor: **Maria Peck**, San Diego, CA (US)
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980,159	A *	12/1910	Kapp	A45B 5/00
					248/155.4
984,292	A *	2/1911	Paris	A45B 5/00
					248/155.4
1,187,297	A *	6/1916	Franke	.....	A45B 5/00
					248/155.4
1,545,054	A *	7/1925	Leister	.....	A45B 5/00
					248/155.4
2,742,956	A *	4/1956	Cannata	.....	A45B 3/00
					135/66
2,766,813	A	10/1956	Kay		
2,798,536	A *	7/1957	Shew	.....	A45B 5/00
					108/115
3,537,748	A	11/1970	Knapp		
4,700,730	A	10/1987	Samuelson et al.		
4,729,395	A	3/1988	Adamson et al.		
5,275,187	A	1/1994	Davis		
5,380,262	A	1/1995	Austin		

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A45B 3/00 (2006.01)
A47C 13/00 (2006.01)
A45B 9/00 (2006.01)

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(58) **Field of Classification Search**
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See application file for complete search history.

(56) **References Cited**

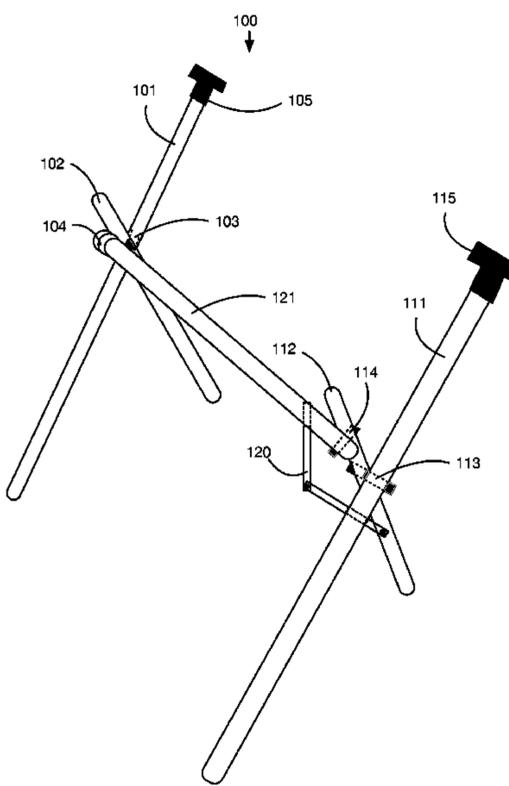
U.S. PATENT DOCUMENTS

617,661	A *	1/1899	Smith	.....	A45B 5/00
					297/118
651,360	A *	6/1900	Kapp	.....	A45B 5/00
					248/155.5
723,382	A *	3/1903	Halin	.....	A45B 5/00
					135/66
757,776	A *	4/1904	Russell	.....	A45B 5/00
					248/155.4

(Continued)
Primary Examiner — David R Dunn
Assistant Examiner — Danielle Jackson
(74) *Attorney, Agent, or Firm* — ARC IP Law, PC;
Joseph J. Mayo

(57) **ABSTRACT**
A device that can be configured as a walking aid, such as one or more canes, or as a chair for sitting. In the walking aid configuration, the device may include two canes. Each cane may have a main leg and a secondary leg that may be rotated parallel to the main leg to form a cane, or rotated away from the main leg to form one half of a chair support. One of the canes may include a seat crossbar that folds out and extends between the two chair supports formed from the two canes. Handles may be attached or integrated into the main legs. Because the chair configuration may be formed from only five linear members (two main legs, two secondary legs, and the seat crossbar), the canes may be compact and lightweight when folded up into the walking aid configuration.

11 Claims, 6 Drawing Sheets



(56)

References Cited

U.S. PATENT DOCUMENTS

5,785,070	A	7/1998	Block et al.	
6,192,908	B1	2/2001	Smith	
6,899,388	B1 *	5/2005	Enrique	A47C 7/66 297/129
8,876,203	B1	11/2014	Haertl et al.	
8,985,599	B2	3/2015	Peterson	
9,089,194	B2	7/2015	Tessier	
9,179,746	B2 *	11/2015	Gullo	A45B 5/00
9,180,064	B2	11/2015	Prather	
2010/0031985	A1 *	2/2010	Decesari	A45B 5/00 135/66
2010/0163087	A1	7/2010	Catton	
2014/0034097	A1	2/2014	Pao	
2014/0034098	A1	2/2014	Pao	
2015/0107636	A1	4/2015	Pao	

* cited by examiner

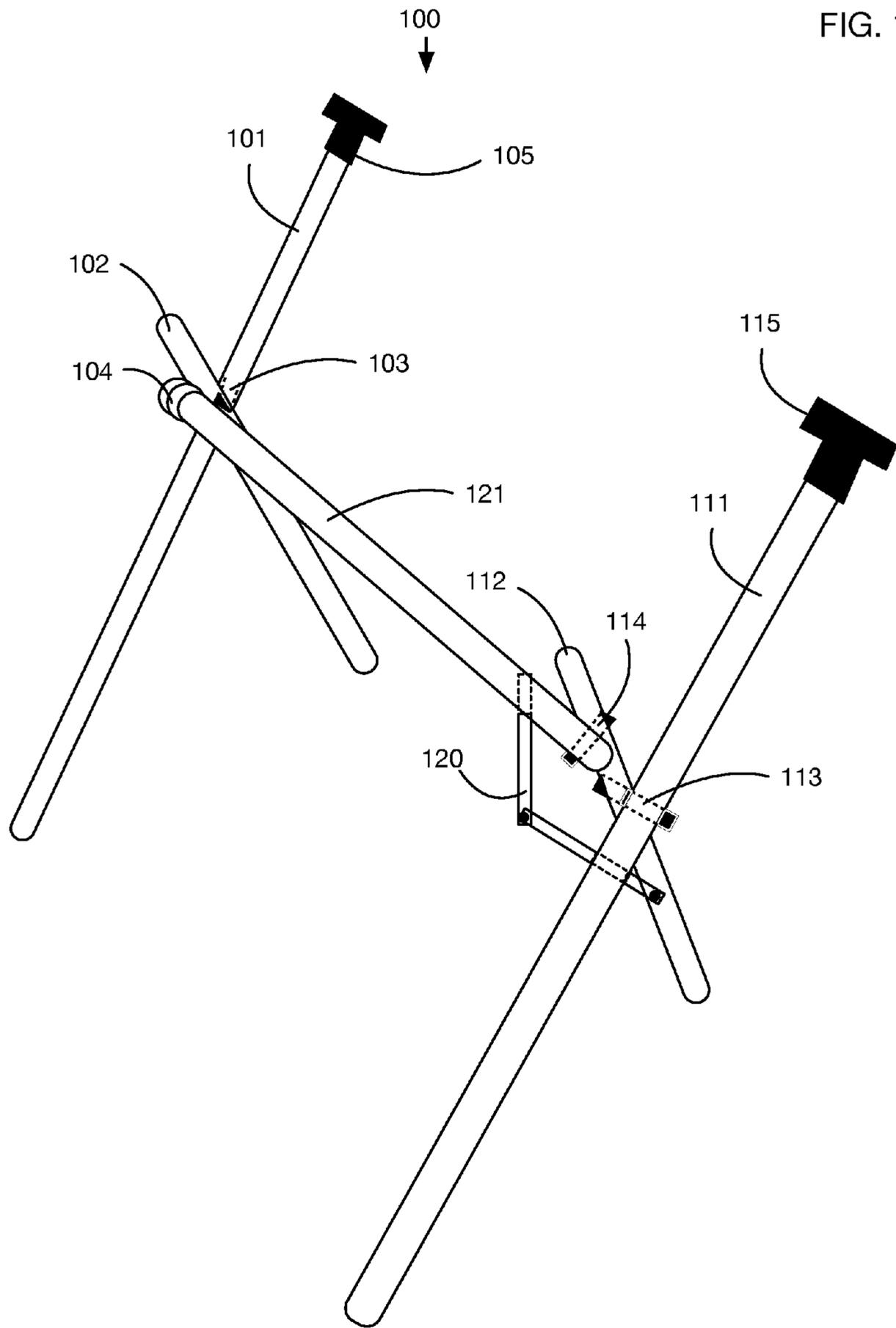


FIG. 2

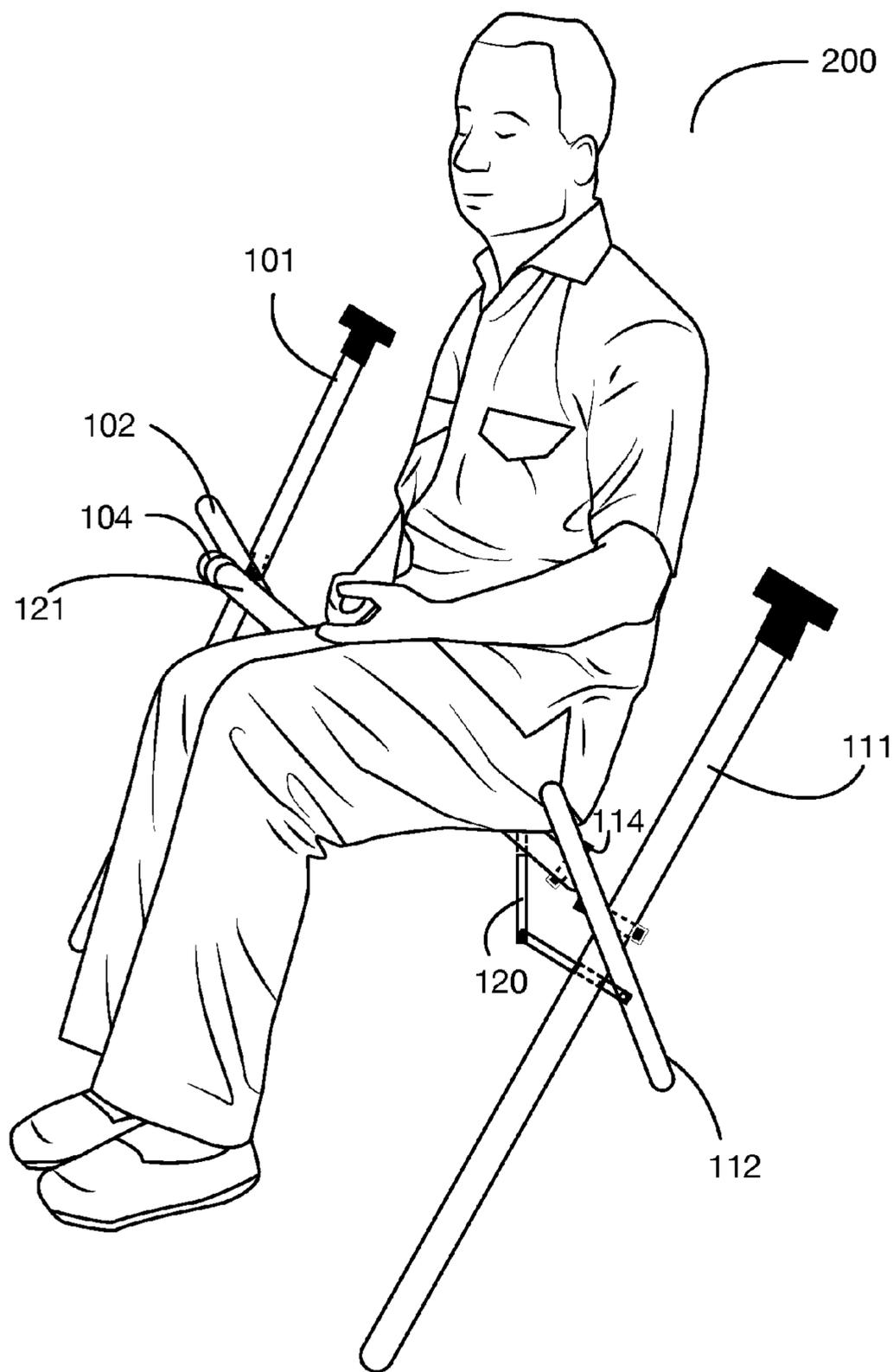
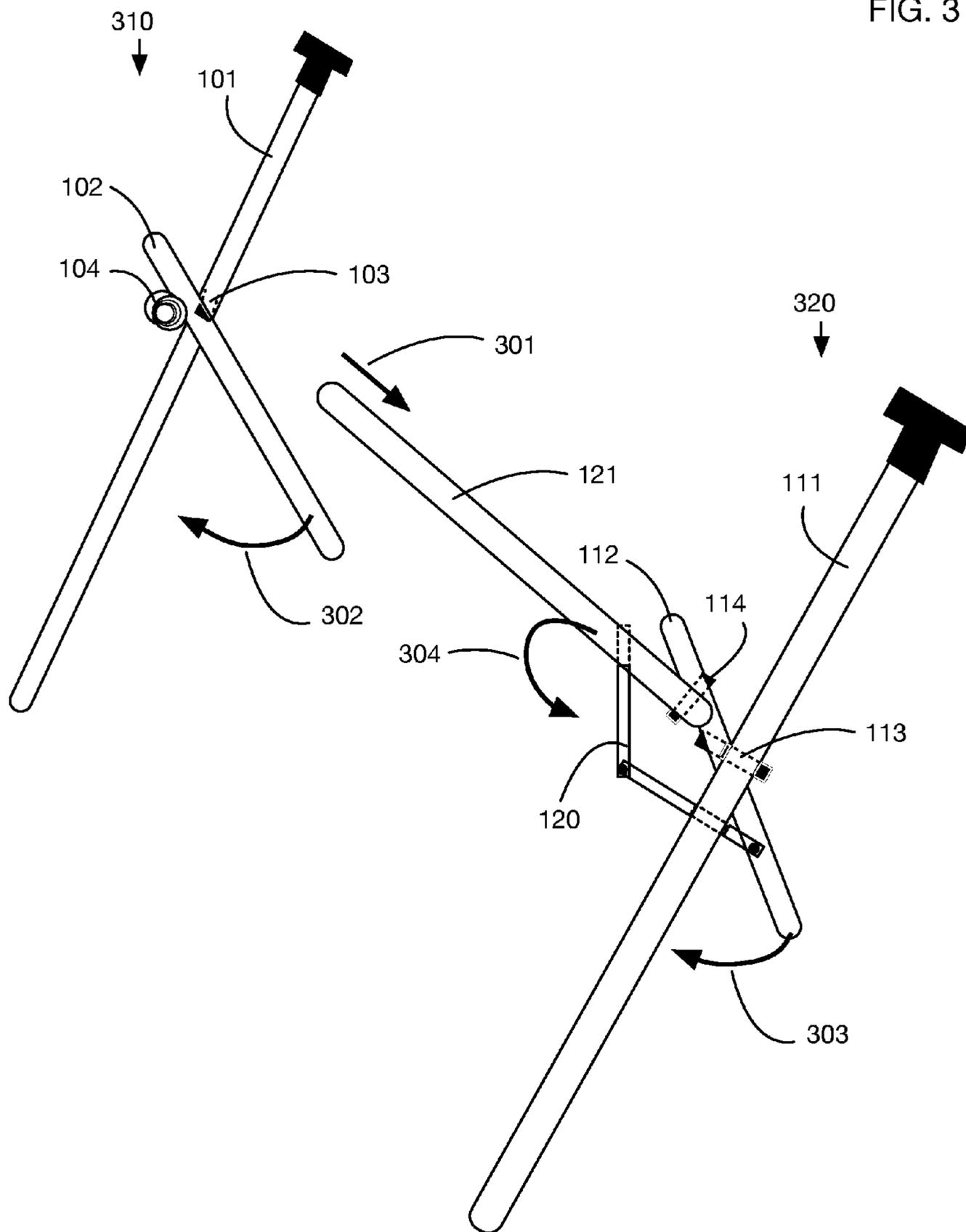


FIG. 3



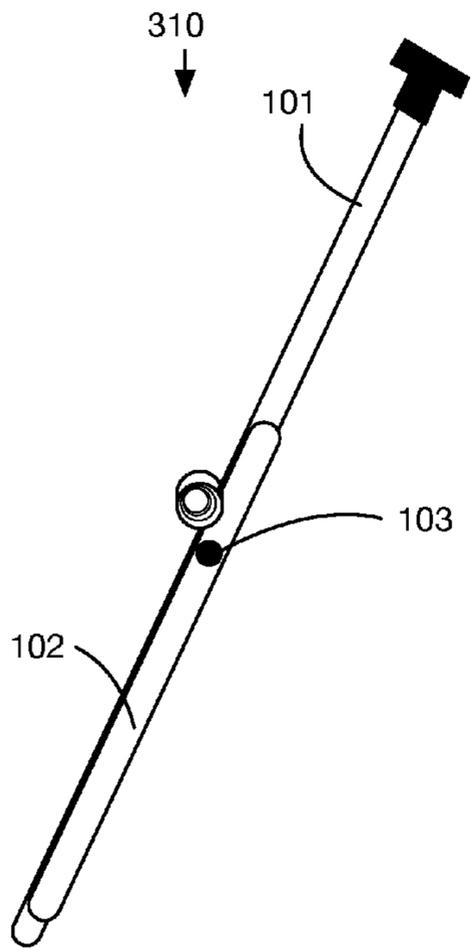


FIG. 4

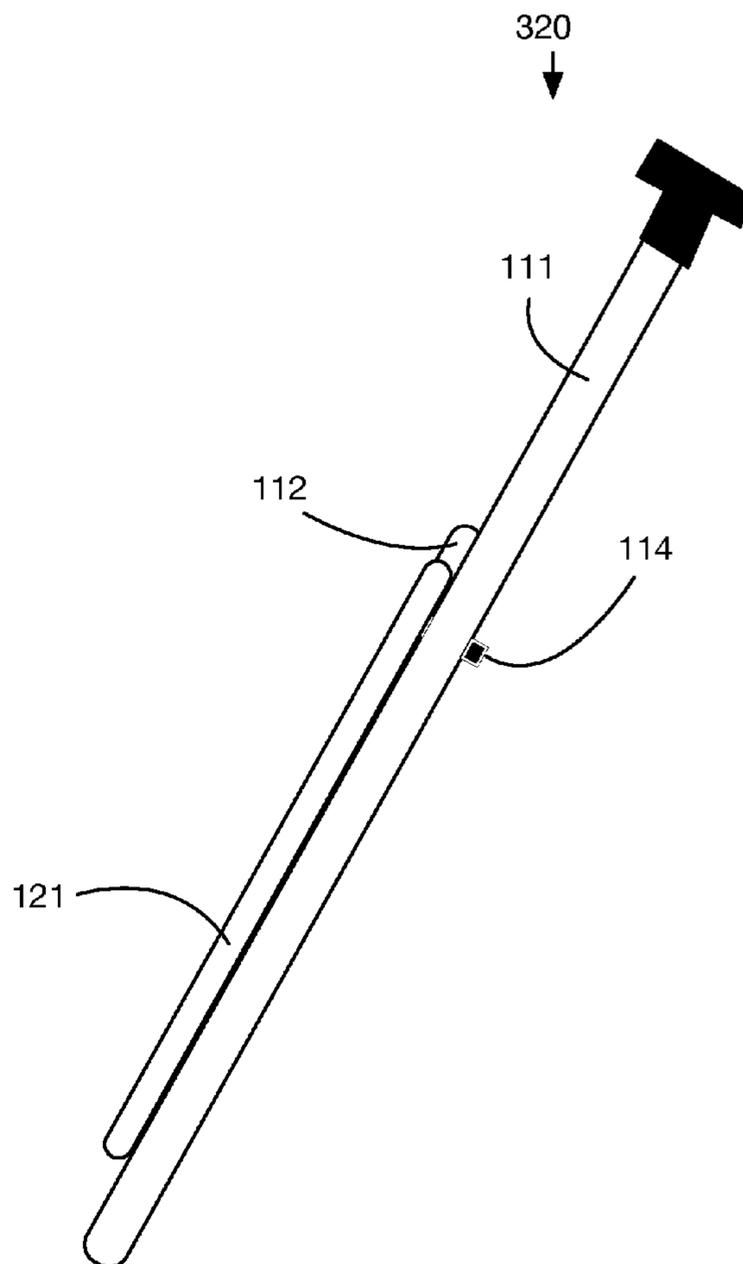
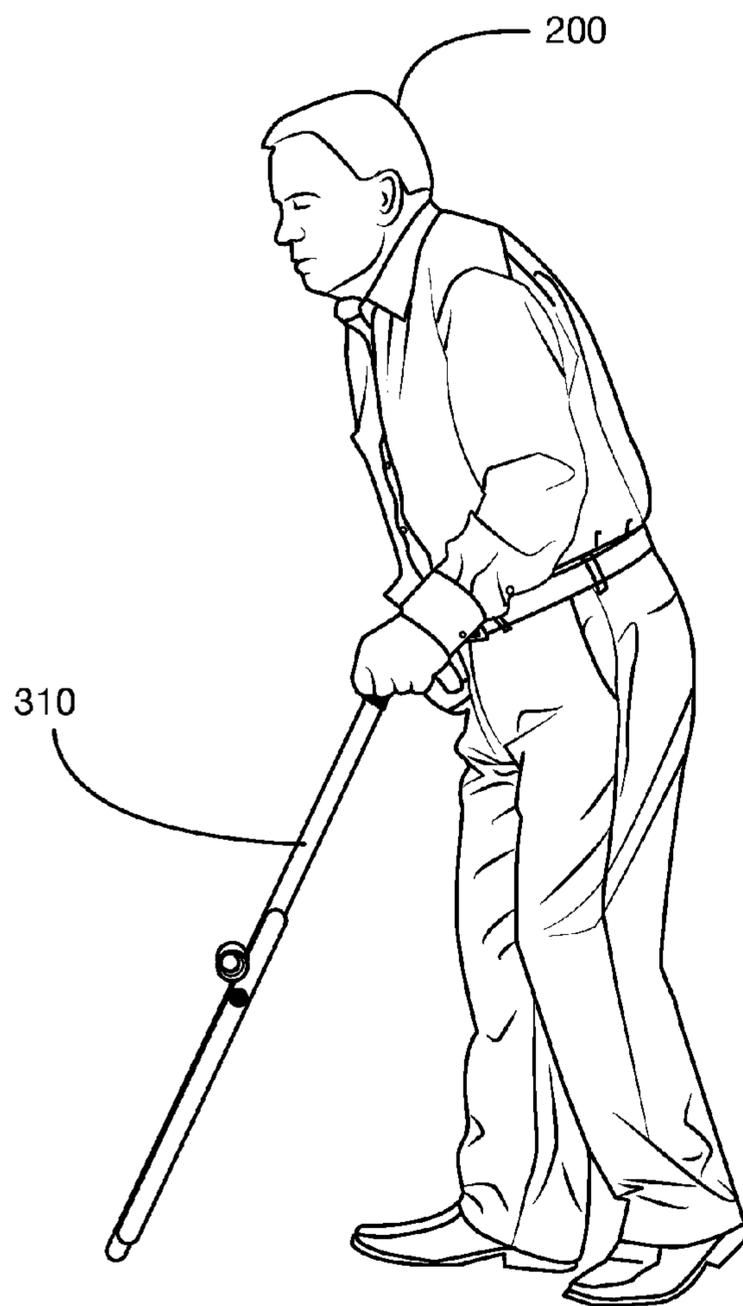
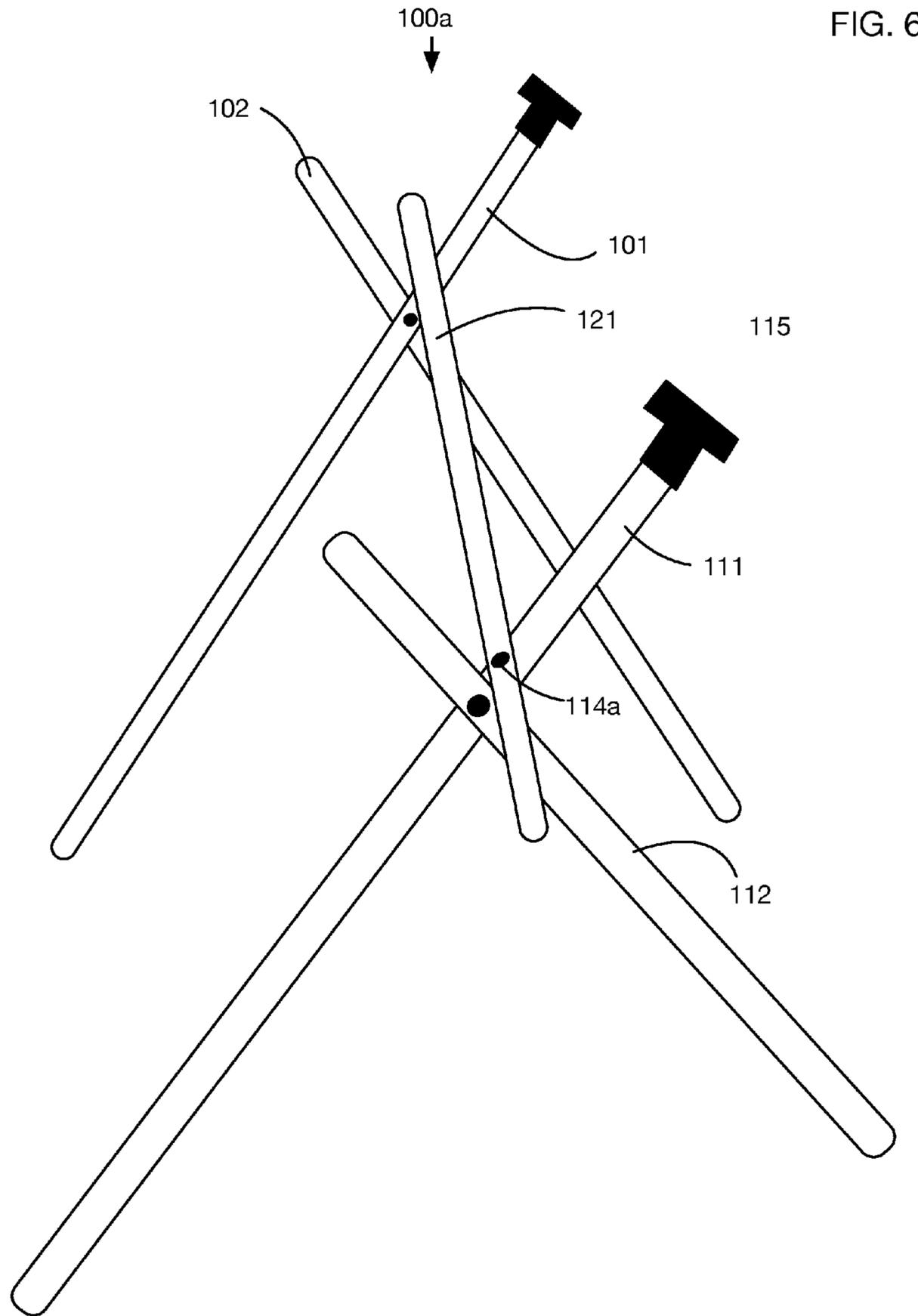


FIG. 5





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CANE WALKING SUPPORT APPARATUS CONFIGURED TO TRANSFORM INTO A CHAIR

BACKGROUND OF THE INVENTION

Field of the Invention

One or more embodiments of the invention are related to the field of walking aid devices. More particularly, but not by way of limitation, one or more embodiments of the invention enable a cane walking support apparatus that is configured to transform into a chair.

Description of the Related Art

Devices that combine walking support functions and seating capabilities are known in the art. For example, United States Patent Application Publication US2010/0163087 A1 teaches a walker that has a seat between the four legs of the walker; the seat can be folded up to allow the user to walk, or folded down to form a chair. United States Patent Application Publication US2014/0034098 A1 teaches a walking stick chair that has a seating surface and several legs than can be folded up to form a walking stick, but the folded configuration may be potentially bulky.

The devices known in the art include a seat or similar structure. Several of these devices are complex and are potentially bulky, heavy, and expensive. While some of the devices can be folded or collapsed when not used as a seat, the folded configuration is not minimal and does not resemble a standard cane. There are no known devices that use a minimal structure with a simple crossbar to form a seat between two canes, and that fold into compact canes when not used for sitting.

For at least the limitations described above there is a need for a cane walking support apparatus configured to transform into a chair.

BRIEF SUMMARY OF THE INVENTION

One or more embodiments described in the specification are related to a cane walking support apparatus configured to transform into a chair. Embodiments of the invention can be configured in a cane configuration for use as a walking aid, and in a chair configuration for sitting. In the cane configuration, one or more embodiments may fold for example into two separate canes, each of which may be simple and streamlined with a simple vertical shape.

One or more embodiments of the invention may have four support legs—two left support legs and two right support legs—and a seat support bar that may extend between the left and right sides. The two left support legs may be connected via a left support leg joint that allows these legs to rotate with respect to one another. Similarly, the two right support legs may be connected via a right support leg joint that allows these legs to rotate with respect to one another. The seat support bar may be connected to one of the support legs via a seat support joint, which allows the seat support bar to rotate with respect to the connected support leg. The seat support bar may be coupled to the support side opposite the seat support joint by a coupler.

In one or more embodiments, the apparatus may be transformed between a chair configuration and a cane configuration. Transforming into the cane configuration may include, for example, without limitation, rotating the seat support bar and the leg to which it is connected via the seat

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support joint until they are parallel; rotating the two left support legs around the left support leg joint until they are parallel; and rotating the two right support legs around the right support leg joint until they are parallel.

In one or more embodiments, the top of one of the left support legs may have an ergonomic handle. In one or more embodiments, the top of one of the right support legs may have an ergonomic handle. In one or more embodiments, the bottom of one or more support legs may have a non-slip surface. In one or more embodiments, one or more of the support legs may be adjustable in height.

One or more embodiments may include one or more support hinges or other support members coupled to the seat support bar or to any of the support legs.

BRIEF DESCRIPTION OF THE DRAWINGS

The above and other aspects, features and advantages of the invention will be more apparent from the following more particular description thereof, presented in conjunction with the following drawings wherein:

FIG. 1 shows an embodiment of the invention configured as a seat, with a crossbar between two cane elements that are folded out to form left and right seat supports.

FIG. 2 illustrates a user using the seat configuration of FIG. 1 as a chair.

FIG. 3 shows how the seat configuration of FIG. 1 may be transformed into a cane configuration.

FIG. 4 shows the folded-up cane configuration of the embodiment of FIG. 1.

FIG. 5 illustrates a user using the cane configuration of FIG. 4 as a walking aid.

FIG. 6 illustrates a variation of the embodiment of FIG. 1, where the crossbar member between the sides rests in the V-shaped areas formed by the folded-out cane elements.

DETAILED DESCRIPTION OF THE INVENTION

A cane walking support apparatus configured to transform into a chair will now be described. In the following exemplary description, numerous specific details are set forth in order to provide a more thorough understanding of embodiments of the invention. It will be apparent, however, to an artisan of ordinary skill that the present invention may be practiced without incorporating all aspects of the specific details described herein. In other instances, specific features, quantities, or measurements well known to those of ordinary skill in the art have not been described in detail so as not to obscure the invention. Readers should note that although examples of the invention are set forth herein, the claims, and the full scope of any equivalents, are what define the metes and bounds of the invention.

FIG. 1 shows an embodiment **100** of the invention, shown in a chair configuration. Seat support crossbar **121** is extended between a left support side and a right support side. Each of the two support sides may fold into a cane configuration, as described below. The right support includes two support legs **101** and **102** connected by a joint **103** around which the legs can pivot. Similarly, the left support includes two support legs **111** and **112** connected by a joint **113** around which the legs can pivot. In FIG. 1, legs **101** and **102** are shown pivoted away from one another to form the right support for the chair, and legs **111** and **112** are shown pivoted away from one another to form the left support for the chair. Seat support crossbar **121** is connected to left leg **112** by joint **114**. In one or more embodiments, the seat support

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crossbar **121** may be connected to a right leg by a joint instead of to a left leg. To form the chair configuration, seat support crossbar **121** may be rotated around joint **114** until it is approximately horizontal, and it may then be coupled to one or both of the right support legs. Embodiments may use any desired type of coupler or coupling to attach the seat crossbar to the right support. In the embodiment shown in FIG. **1**, seat crossbar **121** is inserted into coupler **104**, which may for example be a simple cylindrical receiver into which the crossbar is inserted. One or more embodiments may use any other types of couplers between the seat crossbar **121** and the right legs **101** or **102**, such as for example, without limitation, pins, latches, bolts, screws, Velcro, ties, snaps, hooks, dowels, press fits, or any combinations thereof.

In the embodiment shown in FIG. **1**, right leg **101** and left leg **111** have top handles **105** and **115**, respectively. These handles may for example facilitate use of the invention as canes or other walking aids. The shape of handles **105** and **115** is illustrative; one or more embodiments may have handles of any desired size, shape, texture, and material. In one or more embodiments, the handle or handles may be ergonomic. In one or more embodiments, a left handle may have a different size, shape, texture, or material from a right handle. In one or more embodiments, the handle or handles may be integrated into the legs **101** and **111**. In one or more embodiments, the handle or handles may be detachable or interchangeable. In one or more embodiments, the right or left legs may be adjustable in height, for example via a telescoping mechanism or by installation or removal of extensions; these adjustments may be used for example to adjust the height of the seat in the sitting configuration, or to adjust the height of the walking aids in the cane configuration. In one or more embodiments, the seat crossbar may be adjustable in length, width, diameter, or any other dimension. In one or more embodiments, the bottoms of any or all of legs **101**, **102**, **111**, and **112** may be made of a non-slip surface. In one or more embodiments, the bottoms of any or all of these legs may have attached feet that provide for example, without limitation, additional stability, shock absorption, non-slip surfaces, rolling, wheels, or any other capabilities.

The embodiment illustrated in FIG. **1** has a single seat crossbar **121**. In one or more embodiments, there may be two or more seat crossbars, any or all of which may pivot with respect to one of the support legs and may be coupled in any manner to an opposite support leg. Similarly, the embodiment illustrated in FIG. **1** has two support legs on each side; in one or more embodiments, there may be three or more support legs on one or both sides.

One or more embodiments may include one or more support elements that may for example connect the seat crossbar to one of the support legs. The embodiment shown in FIG. **1** has a folding hinge support **120** that is connected to seat crossbar **121** and to support leg **112**. The support **120** is shown partially folded for illustration; typically, this support may be fully extended and locked into position when the device is fully deployed in the chair configuration.

FIG. **2** shows an example of using the embodiment of FIG. **1** in the chair configuration for sitting. User **200** sits on the device, specifically on seat crossbar **121**. The bottoms of support legs **101**, **102**, **111**, and **112** rest on the ground or on another surface. The weight of user **200** is supported by the seat crossbar **121**, and is transmitted to the support legs via joint **114** and via coupler **104**, and potentially also by other supports such as folding hinge support element **120**.

FIG. **3** illustrates transforming the embodiment of FIG. **1** from the chair configuration to a cane configuration. Seat

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crossbar **121** is moved in direction **301** out of coupler **104**, thereby separating the left side of the device **320** and the right side **310**. Each of the two sides **310** and **320** are then folded into a cane configuration. Specifically support leg **102** is rotated **302** around joint **103** until it is effectively parallel with leg **101**. Seat crossbar **121** is rotated **304** around joint **114**, and folding hinge support element **120** is collapsed. Then support leg **112** is rotated **303** around joint **113** until it is effectively parallel with support leg **111**. These motions are illustrative; in one or more embodiments, other motions or other sequences may be used to transform the chair configuration into one or more cane configurations.

FIG. **4** shows the components **310** and **320** in the folded-up cane configurations after the transformations described above. In cane configuration **310**, legs **101** and **102** are effectively parallel. In cane configuration **320**, legs **111** and **112** and seat support crossbar **121** are effectively parallel. FIG. **5** illustrates user **200** using the cane configuration **310** as a walking assistance device. Cane configuration **320** may similarly be used as a walking assistance device, either by user **200** or by a different user.

FIG. **6** illustrates another embodiment **100a** of the apparatus, shown in a chair configuration. In this embodiment, the seat support crossbar **121** is coupled to the right support legs by resting in the V-shaped area formed between the top portions of legs **101** and **102**. The seat support crossbar **121** is connected to left support leg **111** via joint **114a**, around which the support leg pivots to transform between the seat configuration shown in FIG. **6** and a folded-up cane configuration.

While the invention herein disclosed has been described by means of specific embodiments and applications thereof, numerous modifications and variations could be made thereto by those skilled in the art without departing from the scope of the invention set forth in the claims.

What is claimed is:

1. A cane walking support apparatus configured to transform into a chair comprising:
 - a first left support leg with a top portion and a bottom portion;
 - a first right support leg with a top portion and a bottom portion;
 - a second left support leg with a top portion and a bottom portion;
 - a second right support leg with a top portion and a bottom portion;
 - a seat support bar;
 - a left support leg joint,
 - wherein the left support leg joint is configured to rotatably couple the first left support leg to the second left support leg;
 - a right support leg joint,
 - wherein the right support leg joint is configured to rotatably couple the first right support leg to the second right support leg;
 - a seat support joint,
 - wherein the seat support joint is coupled to the top portion of the second left support leg, and,
 - wherein the seat support bar is rotatably coupled to the second left support leg by the seat support joint;
 - a coupler,
 - wherein the coupler is coupled to the top portion of the second right support leg, and,
 - wherein the coupler is configured to couple the seat support bar to the second right support leg; and,
 - a folding hinge support that is connected to the seat support bar and to the first left support leg,

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wherein said folding hinge support is configured to transform from a partially folded position to a fully extended position, and
 wherein said folding hinge support comprises a first end coupled to said seat support bar and a second end coupled to said first left support leg;
 wherein said first left support leg, said second left support leg, said first right support leg, said second right support leg, said seat support bar, said left support leg joint, said right support leg joint, said seat support joint, said coupler and said folding hinge support are configured to transform between a chair configuration and two canes configuration,
 wherein to transform to said two canes configuration said seat support bar is configured to move out of said coupler to separate said first left support leg and said second left support leg from said first right support leg and said second right support leg,
 said second right support leg is configured to rotate into a parallel orientation with respect to said first right support leg, and
 said seat support bar is further configured to rotate around said seat support joint, said folding hinge support is further configured to collapse and said second left support leg is configured to rotate around said left support leg joint until said second left support leg is in a parallel orientation with respect to said first left support leg
 such that said seat support bar, said first left support leg and said second left support leg are in a parallel orientation with respect to one another.

2. The cane walking support apparatus configured to transform into a chair of claim 1, wherein the top portions of the first left support leg and the first right support leg comprise an ergonomic handle.

3. The cane walking support apparatus configured to transform into a chair of claim 1, wherein the top portions of the first left support leg and the first right support leg are configured to adjust in height.

4. The cane walking support apparatus configured to transform into a chair of claim 1, wherein the bottom portions of the first left support leg, the first right support leg, the second left support leg, and the second right support leg comprise a non-slip surface.

5. The cane walking support apparatus configured to transform into a chair of claim 1, wherein the bottom portions of the first left support leg, the first right support leg, the second left support leg, and the second right support leg are configured to adjust in height.

6. The cane walking support apparatus configured to transform into a chair of claim 1, wherein the coupler is coupled to the top portion of the second right support leg on an outside surface of said second right support leg and wherein said coupler is a separate element than said second right support leg.

7. The cane walking support apparatus configured to transform into a chair of claim 1, wherein the seat support bar is configured to adjust in length.

8. A cane walking support apparatus configured to transform into a chair comprising:

- a first left support leg with a top portion and a bottom portion;
- a first right support leg with a top portion and a bottom portion;
- a second left support leg with a top portion and a bottom portion;

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a second right support leg with a top portion and a bottom portion;
 a seat support bar;
 a left support leg joint,
 wherein the left support leg joint is configured to rotatably couple the first left support leg to the second left support leg;
 a right support leg joint,
 wherein the right support leg joint is configured to rotatably couple the first right support leg to the second right support leg;
 a seat support joint,
 wherein the seat support joint is coupled to the top portion of the second left support leg, and,
 wherein the seat support bar is rotatably coupled to the second left support leg by the seat support joint;
 a coupler,
 wherein the coupler is coupled to the top portion of the second right support leg, and,
 wherein the coupler is configured to couple the seat support bar to the second right support leg; and,
 at least one folding hinge support,
 wherein the at least one folding hinge support is connected to the seat support bar and to the first left support leg to couple the seat support bar to the first left support leg,
 wherein said at least one folding hinge support is configured to transform from a partially folded position to a fully extended position,
 wherein said at least one folding hinge support comprises a first end coupled to said seat support bar and a second end coupled to said first left support leg;
 wherein said coupler is coupled to the top portion of the second right support leg on an outside surface of said second right support leg and wherein said coupler is a separate element than said second right support leg,
 wherein the seat support bar is configured to adjust in length,
 wherein said first left support leg, said second left support leg, said first right support leg, said second right support leg, said seat support bar, said left support leg joint, said right support leg joint, said seat support joint, said coupler and said at least one folding hinge support are configured to transform between a chair configuration and two canes configuration,
 wherein to transform to said two canes configuration said seat support bar is configured to move out of said coupler to separate said first left support leg and said second left support leg from said first right support leg and said second right support leg,
 said second right support leg is configured to rotate into a parallel orientation with respect to said first right support leg, and
 said seat support bar is further configured to rotate around said seat support joint, said at least one folding hinge support is further configured to collapse and said second left support leg is configured to rotate around said left support leg joint until said second left support leg is in a parallel orientation with respect to said first left support leg
 such that said seat support bar, said first left support leg and said second left support leg are in a parallel orientation with respect to one another.

9. The cane walking support apparatus configured to transform into a chair of claim 8, wherein the top portions of the first left support leg and the first right support leg comprise an ergonomic handle.

10. The cane walking support apparatus configured to transform into a chair of claim 9, wherein the height of the top portions of the first left support leg and the first right support leg are configured to adjust in height.

11. The cane walking support apparatus configured to transform into a chair of claim 8, wherein the bottom portions of the first left support leg, first right support leg, second left support leg, and second right support leg comprise a non-slip surface.

* * * * *